

WHAT IS CLAIMED IS:

1. A manipulator comprising:

a contact portion to a manipulation target object;

5 a pressure chamber;

fluid control means for controlling pressure in said pressure chamber; and

an opening at said contact portion, said opening communicating with said pressure chamber, wherein

10 the target object is manipulated by causing the fluid control means to control inflow/outflow of a fluid through said opening.

2. The manipulator according to claim 1, comprising

15 a plurality of said openings for which the inflow/outflow of the fluid can independently be controlled by the fluid control means at said contact portion to the manipulation target object, wherein

the fluid control means moves the target object
20 in a desired direction by executing at least one of ejection of the fluid from the openings located on an opposite side of the direction in which the target object should be moved and drawing of the fluid from the openings located on the same side as the direction
25 in which the target object should be moved.

3. The manipulator according to claim 1, wherein

the manipulator is a gripper type manipulator having a plurality of said contact portions at opposite positions and clamping the target object by said contact portions, and

5 each of said contact portions has said opening for which the inflow/outflow of the fluid is controlled by said fluid control means.

4. The manipulator according to claim 1, wherein
10 said contact portion has a recessed portion which is fitted on the target object to clamp the target object, and

the contact portion having said recessed portion has the opening for which the inflow/outflow of the
15 fluid is controlled by the fluid control means.

5. The manipulator according to claim 3, wherein
the fluid control means controls attitude of the target object by generating a couple of forces by
20 executing at least one of ejection and drawing of the fluid to a position shifted from a center of gravity of the target object.

6. The manipulator according to claim 4, wherein
25 the fluid control means controls attitude of the target object by generating a couple of forces by executing at least one of ejection and drawing of the

fluid to a position shifted from a center of gravity of the target object.

7. The manipulator according to claim 3, wherein

5 the fluid control means performs an operation of feeding the target object by executing at least one of ejection of the fluid from the openings which are oppose each other on both sides and located on a side opposite to a direction in which the target object
10 should be fed and drawing of the fluid from the openings which are oppose each other on both sides and located on the same side as the direction in which the target object should be fed.

15 8. The manipulator according to claim 4, wherein

the fluid control means performs an operation of feeding the target object by executing at least one of ejection of the fluid from the openings which are oppose each other on both sides and located on a side
20 opposite to a direction in which the target object should be fed and drawing of the fluid from the openings which are oppose each other on both sides and located on the same side as the direction in which the target object should be fed.

25

9. The manipulator according to claim 3, wherein the fluid control means performs an operation of feeding

the target object by controlling to make the fluid
flowing through the openings on the same side as a
direction in which the target object should be fed have
a flow velocity different from that of the fluid
5 flowing through the openings on a side opposite to the
direction in which the target object should be fed.

10. The manipulator according to claim 4, wherein the
fluid control means performs an operation of feeding
10 the target object by controlling to make the fluid
flowing through the openings on the same side as a
direction in which the target object should be fed have
a flow velocity different from that of the fluid
flowing through the openings on a side opposite to the
15 direction in which the target object should be fed.

11. The manipulator according to claim 1, wherein the
pressure chamber is connected to a separated fluid
storage and a feeding device.

20

12. The manipulator according to claim 1, wherein the
fluid control means is temperature control means.

13. The manipulator according to claim 1, wherein the
25 fluid control means is means for controlling the fluid
by deforming the pressure chamber, the means being
formed from an element capable of externally

controlling mechanical deformation.

14. A robot hand comprising at least one manipulator,
said manipulator comprising:

5 a contact portion to a manipulation target
object;

a pressure chamber;

fluid control means for controlling pressure in
said pressure chamber; and

10 an opening at said contact portion, said opening
communicating with said pressure chamber, wherein

the target object is manipulated by causing the
fluid control means to control inflow/outflow of a
fluid through said opening.

15